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Before the  
**FEDERAL COMMUNICATIONS COMMISSION**  
Washington, D.C. 20554

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FEDERAL COMMUNICATIONS COMMISSION  
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In the Matter of	)	GEN Docket No. 90-314
	)	ET Docket No. 92-100
Amendment of the Commission's	)	RM-7140, RM-7175, RM-7617,
Rules to Establish New	)	RM-7618, RM-7760, RM-7782
Personal Communications	)	RM-7680, RM-7977, RM-7978
Services	)	RM-7979, RM-7980
	)	

To: The Commission

**REPLY COMMENTS  
OF LOWER COLORADO RIVER AUTHORITY**

The LOWER COLORADO RIVER AUTHORITY ("LCRA"), by its attorneys and pursuant to Section 1.45 of the Commission's Rules, hereby submits its Replies to Comments filed by other parties in the above-referenced proceeding.<sup>1</sup> The Comments addressed a Notice of Proposed Rule Making and Tentative Decision ("Notice") in which the Federal Communications Commission ("FCC" or "the Commission") proposed a licensing and regulatory plan for deployment of personal communications services ("PCS") on 2 GHz frequencies currently allocated to private fixed microwave licensees.<sup>2</sup>

LCRA is a public power company that provides electric service to about 44 wholesale customers, including 33 municipalities and 11 cooperatives, in 51 counties in central Texas. It operates private fixed microwave systems on the 2 GHz

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<sup>1</sup> The deadline for filing reply comments was extended to January 8, 1993. Order Extending Time for Reply Comments, DA 92-1600, released November 24, 1992.

<sup>2</sup> Notice of Proposed Rule Making and Tentative Decision, 7 FCC Rcd 5676 (1992).

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band to remotely monitor high-power transmission lines, relay critical telemetry data between generating stations and substations, coordinate operations with other electric utilities and for other vital day-to-day functions. LCRA has participated in FCC proceedings on deployment of PCS in the 2 GHz band as a member of the Large Public Power Council.

**I. THE COMMISSION MUST ENSURE MICROWAVE LICENSEES INTERFERENCE PROTECTION EQUIVALENT TO STANDARD 10-E.**

LCRA strongly urges the Commission to maintain its proposal to guarantee 2 GHz microwave licensees the same level of protection from PCS interference as currently is provided for microwave-to-microwave interference under Section 94.63 of the Commission's rules.<sup>3</sup> The existing standard, based on EIA/TIA Standard 10-E, has served the public interest by providing essential interference protection to private microwave systems used for critical operations and safety applications by electric utilities, railroads, pipeline companies and public safety organizations.<sup>4</sup> Without the interference protection provided by this standard, private microwave licensees would be unable to meet their high reliability requirements, and public safety would be threatened.

The comments of several PCS proponents state that Standard 10-E, designed for microwave-to-microwave interference, is too

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<sup>3</sup> 47 C.F.R. § 94.63.

<sup>4</sup> See, e.g., Comments of Association of American Railroads, Edison Electric Institute, Utilities Telecommunications Council ("UTC"), American Petroleum Institute ("API") and American Gas Association.

conservative and inappropriate for PCS-to-microwave interference protection.<sup>5</sup> Some parties claim that interference protection equivalent to 10-E will stifle deployment of PCS or make it inefficient or unprofitable. The Commission should not be swayed by these prophecies of doom. Indeed, other PCS proponents claim that PCS can be deployed successfully while providing interference protection consistent with 10-E.<sup>6</sup> Moreover, at least one party claims that Standard 10-E may need to be strengthened to adequately protect private microwave licensees sharing spectrum with PCS.<sup>7</sup> Consequently, the Commission must be very skeptical of all proposals that would provide private microwave licensees less interference protection than under existing rules.

Several commenters pointed out problems with applying an interference standard developed for fixed-to-fixed systems to PCS systems, which will involve base stations and mobile units. LCRA recognizes that standard 10-E must be modified to accommodate these functional differences. Obviously, calculating the level of interference to a fixed receiver from numerous mobile units at any given time requires different technical considerations than calculating interference among fixed microwave stations.

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<sup>5</sup> See, e.g., Comments of Telocator at 18-19; Tel/Logic at 17; PCN America at 8-9; Ericsson at 17-20; Bell Atlantic at 45-48; Sprint at A1-A3; and Comcast Communications at 39-40.

<sup>6</sup> See, e.g., Comments of American Personal Communications at 54-58; Northern Telecom at 35-36; Comsearch at 9-11; Matsushita Communications Industrial at 3-4; and Corporate Technology Partners at 5-6.

<sup>7</sup> Comments of Harris Corporation, Farinon Division at 3-4.

However, changing standard 10-E to correspond with a different source of interference -- mobile services -- does not require changing the threshold level of interference protection.

LCRA is skeptical about the effectiveness of the "listen-before-talk" interference avoidance methodologies advocated by several commenters.<sup>8</sup> Because of the highly directionalized nature of point-to-point microwave transmissions, it will be necessary to colocate the detection equipment used by the PCS system precisely at the receiving antenna of the microwave relay system. However, not all proponents of the "listen-before-talk" avoidance methodology intend to locate their detection equipment in that manner. Unless colocated, there is a strong likelihood that the detection equipment will not be able to "hear" the point-to-point microwave signal because of shadowing and shieldings as a result of intervening obstructions such as buildings and terrain. In such circumstances, the "listen-before-talk" approach poses too great a risk of interfering with private microwave operations.

Many commenters discussed the activity of industry standards bodies to modify Standard 10-E to apply PCS-to-microwave interference. LCRA generally supports the Commission's decision to defer to the industry to develop technical standards, but it believes that the Commission must require the standards bodies to maintain the Standard 10-E level of protection in whatever PCS-to-microwave standard they eventually adopt. In addition, the

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<sup>8</sup> See, e.g., Comments of Tel/Logic at 17; Southwestern Bell at 28-31; and U.S. Telephone Association at 38.

Commission should closely monitor the standards bodies' activities to ensure that the interests of private microwave licensees are fully considered.<sup>9</sup>

Irrespective of the specific calculation methodology adopted in a PCS-to-microwave interference standard, it is essential that the standard meet the threshold of Standard 10-E. This standard was developed over many years and has been modified and refined to meet the needs of fixed microwave users. The Commission should be extremely hesitant to cast aside or diminish the Standard 10-E level of interference protection that has served the public interest for so long.

The need for an overall interference standard equivalent to 10-E is especially critical in light of the Commission's commitment to providing PCS licensees maximum flexibility in system technology and service applications.<sup>10</sup> This flexibility will permit a wide variety of PCS operations with various network configurations, power levels and user patterns. Technologies employed in this fledgling industry undoubtedly will undergo rapid, and perhaps dramatic, change. Technical considerations affecting interference calculations are likely to change as well. Private fixed microwave licensees operating in a volatile PCS environment need the assurance that the reliability of their systems will be maintained regardless of the specific PCS system

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<sup>9</sup> UTC expressed its concern "that the standards-setting bodies on which the Commission intends to rely are not necessarily responsive to or accessible to full participation by all of the competing interests in this proceeding." Comments of UTC at 6.

<sup>10</sup> Notice at para. 28.

operating in their area. An overall general standard guaranteeing microwave licensees interference protection equivalent to that provided by Standard 10-E will provide this assurance.

The uncertainty of how PCS will develop also necessitates policies that will enable microwave licensees to protect the integrity of their systems that are sharing spectrum with PCS. LCRA agrees with the proposal by Sprint that microwave licensees be permitted to request that PCS licensees recalculate interference levels at specified time periods to ensure compliance with the final standard.<sup>11</sup> Such a procedure would enable microwave licensees to protect their own operations and assist the Commission in ensuring that PCS licensees make system changes necessary to conform to interference standards. In addition, LCRA agrees with API that PCS applicants and licensees must file with the Commission sufficient technical information to enable microwave licensees to address potential interference problems.<sup>12</sup> PCS applicants should specify every base station, and, once licensed, must submit applications specifying the location of all new stations and the technical details of all proposed modifications.<sup>13</sup>

LCRA notes that in ET Docket 92-9, the underlying 2 GHz spectrum reallocation proceeding, the Commission recognized the

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<sup>11</sup> Comments of Sprint at A1-A3.

<sup>12</sup> Comments of API at 10-11.

<sup>13</sup> The Commission also should require frequency coordination before PCS licensing and before any system modification.

critical nature of 2 GHz microwave licensees' operations and their high reliability requirements. As a result, the Commission proposed involuntary relocation of microwave licensees only if they have access to alternative systems or frequencies with "comparable reliability."<sup>14</sup> The Commission based this requirement on proposals that specifically link reliability to the interference protection provided by Standard 10-E.<sup>15</sup> The same reliability requirements justify maintaining interference protection equivalent to that provided by Standard 10-E for those microwave licensees that remain in the 2 GHz band after deployment of PCS. It would be illogical and inconsistent for the Commission to guarantee Standard 10-E interference protection for displaced 2 GHz microwave licensees and not for those remaining in the band.

**II. THE COMMISSION SHOULD ADOPT PCS POWER AND ANTENNA HEIGHT LIMITS CONSISTENT WITH MICROCELLULAR SERVICE.**

LCRA agrees with the commenters supporting the Commission's proposed maximum base station power limit of 10 watts (EIRP) and an antenna height of 91 meters (300 feet) above average terrain,

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<sup>14</sup> First Report and Order and Third Notice of Proposed Rule Making, ET Docket 92-9, released October 16, 1992, at para. 24.

<sup>15</sup> The involuntary relocation plan proposed in ET Docket 92-9 was based in large part on Senate legislation requiring the Commission to authorize deployment of PCS without causing "harmful interference" to private fixed microwave licensees. First Report and Order and Third Notice of Proposed Rule Making at para. 23. The bill explicitly defined "harmful interference" as interference exceeding the level of protection provided by Standard 10-E. LCRA will fully discuss this issue in comments to be filed January 13, 1993, in ET Docket 92-9.

with a maximum mobile power of two watts (EIRP).<sup>16</sup> Several commenters support the higher limits proposed by the Commission, arguing that they are needed to permit PCS to compete with cellular service.<sup>17</sup> LCRA believes that PCS is intended to be a "microcellular" service.<sup>18</sup> In addition, high-powered PCS poses greater interference potential for microwave facilities.<sup>19</sup> LCRA urges the Commission to adopt the lower power levels.

**III. THE COMMISSION SHOULD NOT ALLOCATE SPECTRUM FOR UNLICENSED PCS UNTIL A MECHANISM TO FUND AND FACILITATE RELOCATION OF EXISTING MICROWAVE LICENSEES IS ESTABLISHED.**

The comments reveal widespread agreement that unlicensed PCS ("U-PCS") requires clear spectrum nationwide and that existing microwave licensees must be cleared from any spectrum the Commission allocates for U-PCS. Many parties discuss the efforts of Telocator, WINForum and other U-PCS proponents to establish a mechanism, such as a nonprofit entity or consortium, to fund and facilitate relocation of incumbent microwave licensees from the 1910-1930 MHz band. LCRA supports these industry efforts but urges the Commission to not make any spectrum available for unlicensed operations until it is certain that a mechanism is in

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<sup>16</sup> LCRA also would support limiting antenna height to 200 feet above average terrain and requiring PCS systems needing higher antennas to obtain a waiver. See Comments of UTC at 14-15.

<sup>17</sup> See, e.g., Comments of Associated PCN at 6-7; Time Warner at 12-13; and Sprint at A3-A4.

<sup>18</sup> See, e.g., Comments of Centel Corporation.

<sup>19</sup> See, e.g., Comments of Bell South at 13-15; and US Telephone Association at 37.



place to accommodate all microwave licensees displaced from the targeted band.

In the First Report and Order and Third Notice of Proposed Rule Making in ET Docket 92-9, the Commission affirmed its intention of granting new technology service providers access to 2 GHz spectrum only if they protect incumbent microwave licensees from harmful interference or pay to relocate them to equally reliable spectrum or alternative systems. PCS proponents, as well as microwave licensees, have recognized that the spectrum sharing and involuntary relocation plan the Commission proposed in ET Docket 92-9 for licensed PCS operations will not work for U-PCS. Nonetheless, the burden remains on the PCS industry to find all displaced microwave licensees equally reliable spectrum and pay relocation costs. The industry proposals discussed in the comments are a significant step toward meeting this burden, and LCRA encourages continued work in this area. Likewise, LCRA urges the Commission to encourage and monitor these activities and expedite its own efforts to gain access to federal government spectrum for displaced microwave licensees. In no case, however, should the Commission make spectrum available for U-PCS until it ensures that all microwave licensees that must be cleared for U-PCS operations have been guaranteed a reliable alternative and full compensation.

Southwestern Bell states in its comments that U-PCS operations in the 1910-1930 MHz band would cause harmful interference to microwave licensees in that band as well as in

the adjacent 1900-1920 and 1930-1940 MHz bands.<sup>20</sup> Proposed power limits would not be effective in eliminating interference, and it may be necessary to clear the 1905, 1915, 1925, and 1935 MHz channels, according to Southwestern Bell. The Commission should fully investigate the effect of U-PCS operations on the bands adjacent to the 1910-1930 MHz frequencies. In addition, the Commission should require that U-PCS guard bands be within the 1910-1930 MHz band and that U-PCS operators design their systems so they will not cause interference outside that band.

**IV. THE COMMISSION SHOULD NOT REDESIGNATE MICROWAVE LICENSEES TO SECONDARY STATUS.**

Many parties responded to the Commission's request for comment on its preliminary proposal for relocation of incumbent microwave licensees from the 2 GHz band. LCRA will fully address relocation issues in comments to be filed January 13, 1993, in ET Docket 92-9. Nonetheless, LCRA reiterates in this proceeding that private fixed microwave licensees cannot operate reliably at secondary status and, if displaced from the 2 GHz band, they must be guaranteed a reliable alternative. Accordingly, the Commission should reject all proposals to redesignate microwave licensees to secondary status.<sup>21</sup>

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<sup>20</sup> Comments of Southwestern Bell at 31-33.

<sup>21</sup> See Comments of AT&T at 6-8; Cellular Service, Inc. at 6-7.


**V. CONCLUSION**

LCRA's primary concern in this proceeding is ensuring that the Commission adopts PCS technical standards and interference criteria that will adequately protect the integrity of fixed microwave licensees in the 2 GHz band. The Commission has stated in this proceeding and in ET Docket 92-9 that it will not authorize deployment of PCS in a manner that jeopardizes the safety and reliability of private fixed microwave operations. To fulfill this guarantee, the Commission must provide interference protection equivalent to Standard 10-E. In addition, the Commission must ensure that all fixed microwave licensees operating on the 1910-1930 MHz bands are guaranteed an equally reliable alternative and full compensation before those frequencies are allocated for U-PCS.

Respectfully submitted,

**THE LOWER COLORADO RIVER AUTHORITY**

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January 8, 1993

## **CERTIFICATE OF SERVICE**

I, Jaime Y.W. Bierds, a secretary for the law firm Verner, Liipfert, Bernhard, McPherson and Hand, Chartered, do hereby certify that a true and correct copy of the foregoing "Reply Comments of Lower Colorado River Authority" was delivered by hand, this 8th day of January, 1993, to the following:

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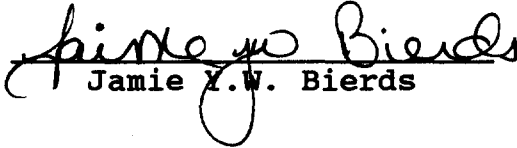
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